Name: Key Period: _____ ID: Practice Test

Unit 9 Test Alg 1

Multiple Choice

Identify the choice that best completes the statement or answers the question.

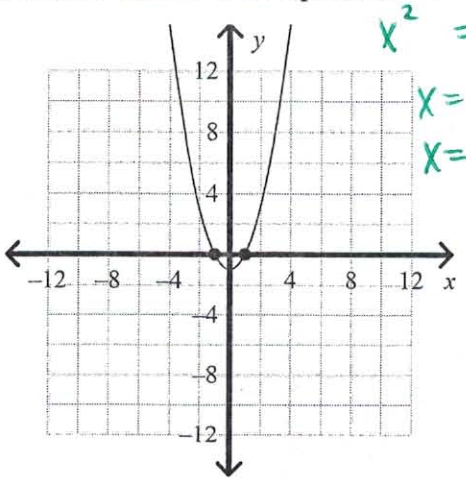
A

1. What are the solutions of the equation $x^2 - 1 = 0$? Use a graph of the related function.

a. $x^2 = 1$

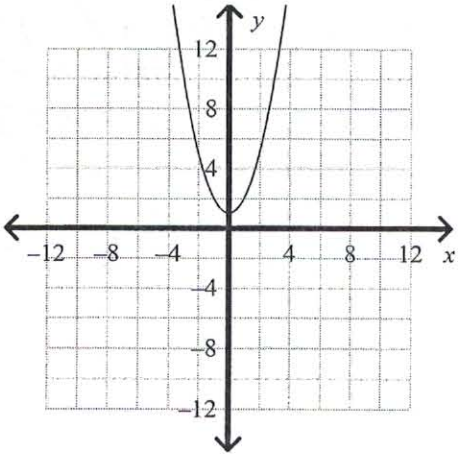
$x = \pm\sqrt{1}$

$x = \pm 1$



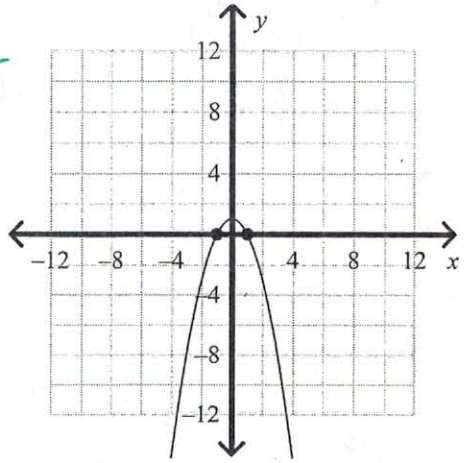
There are two solutions: –1 and 1.

b.

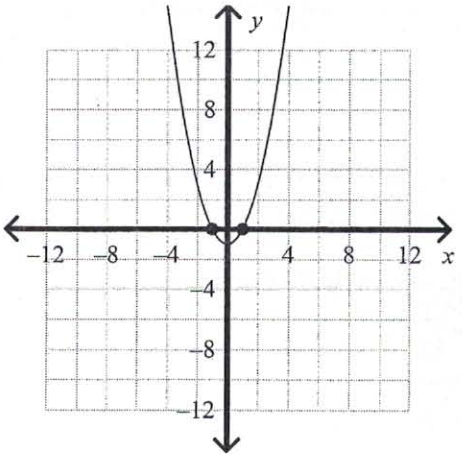


There are no real number solutions.

d.



There are two solutions: –1 and 1.



There are two solutions: $\pm\sqrt{2}$.

Solve the equation using the Zero-Product Property.

D

2. Complete the following sentence:

You can verify the zeros of the function $y = x^2 + 6x - 7$ by using a graph and finding where the graph _____.

a. crosses the y-axis
b. is at a minimum
c. is at a maximum
d. crosses the x-axis

D 3. $-7n(5n+5)=0$

a. $-\frac{1}{7}, 1$

b. $-\frac{1}{7}, -1$

c. 0, 1

d. 0, –1

$-7n(5n+5)=0$

$-7n=0 \mid 5n+5=0$

$n=0 \mid n=-1$

What are the solutions of the equation?

A 4. $z^2-2z-63=0$

a. –7, 9

b. –7, –9

c. 7, –9

d. 7, 9

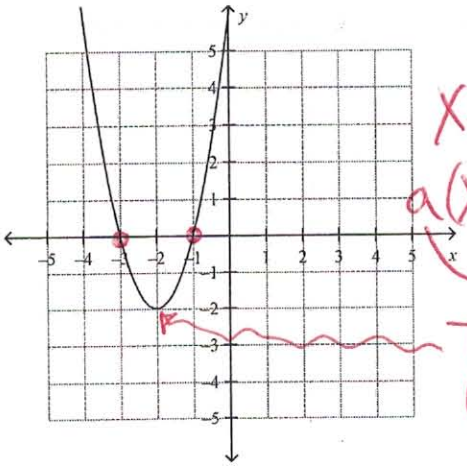
$1,63$ $3,21$ $7,9$

$(z-9)(z+7)=0$

$z-9=0 \mid z+7=0$

$z=9 \mid z=-7$

D 5. What is the factored form of this function?



$x=-1,-3$

$a(x+1)(x+3)=y$

Test a point: $(-2,-2)$?

$a(-2+1)(-2+3)=-2$

$a(-1)(1)=-2$

$-a=-2$

$a=2$

a. $f(x)=(x+2)(x+2)$

b. $f(x)=(x+3)(x+1)$

c. $f(x)=3(x+2)(x+1)$

d. $f(x)=2(x+3)(x+1)$

Simplify the radical expression.

A 6. $\sqrt{16h^2}$

$4 \cdot 4$

$h \cdot h$

a. $4h$

b. $4h^2$

c. $6\sqrt{10h^2}$

d. $h\sqrt{8}$

Simplify the radical expression.

A 7. $\sqrt{\frac{5}{9}}$

$\frac{\sqrt{5}}{\sqrt{9}}=\frac{\sqrt{5}}{3}$

a. $\frac{\sqrt{5}}{3}$

b. $3\sqrt{5}$

c. $\frac{\sqrt{5}}{5}$

d. $\frac{5}{3}$

Solve the equation using square roots.

C 8. $2x^2 - 78 = 84$ ÷2

a. $-\sqrt{9}, \sqrt{9}$
b. $-81, 81$
c. $-9, 9$
d. no real number solutions

$x^2 - 39 = 42$
$+39 \quad +39$
$x^2 = 81$
$x = \pm\sqrt{81} = \pm 9$

Solve the quadratic equation by completing the square.

B 9. $x^2 + 14x + 39 = 0$

a. $7 \pm \sqrt{59}$
b. $-7 \pm \sqrt{10}$
c. $-14 \pm \sqrt{59}$
d. $196 \pm \sqrt{10}$

$x^2 + 14x + 39 = 0$
$x^2 + 14x + 49 + 39 = 0 + 49$
$\left(\frac{14}{2}\right)^2$

$(x+7)(x+7) + 39 = 49$
$-39 \quad -39$
$(x+7)^2 = 10$
$\sqrt{(x+7)^2} = \pm\sqrt{10}$
$x + 7 = \pm\sqrt{10} - 7$
$x = -7 \pm \sqrt{10}$

B 10. What is the value of c such that $x^2 - 8x + c$ is a perfect-square trinomial?

a. -4
b. 16
c. 32
d. 64

$\left(\frac{-8}{2}\right)^2 + 16$

Solve the equation.

A 11. $x^2 - 14x + 49 = 36$ PST

a. 1, 13
b. $-13, 13$
c. $-13, -1$
d. $1, -1$

$(x-7)(x-7) = 36$
$(x-7)^2 = 36$
$\sqrt{(x-7)^2} = \pm\sqrt{36}$
$x - 7 = \pm 6$
$+7 \quad +7$
$x = 7 \pm 6 = 13, 1$

Rewrite the equation in vertex form. Name the vertex and *y*-intercept.

D 12. $y = x^2 + 8x + 13$

a. $y = (x + 8)^2 - 3$
vertex: $(8, -3)$
y-intercept: $(0, -3)$
b. $y = (x + 4)^2 + 29$
vertex: $(-4, -3)$
y-intercept: $(0, 13)$
c. $y = (x + 8)^2 + 9$
vertex: $(8, -3)$
y-intercept: $(0, -3)$
d. $y = (x + 4)^2 - 3$
vertex: $(-4, -3)$
y-intercept: $(0, 13)$

$x^2 + 8x + 16 + 13 - 16$
$\left(\frac{8}{2}\right)^2$
$(x+4)^2 - 3$

Use the quadratic formula to solve the equation. If necessary, round to the nearest hundredth.

D 13. $x^2 + 5 = -6x$

a. $-1, 5$
b. $1, 5$
c. $1, -5$
d. $-1, -5$

$x^2 + 6x + 5 = 0$
$a = 1, b = 6, c = 5$

$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} = \frac{-(6) \pm \sqrt{(6)^2 - 4(1)(5)}}{2(1)}$

$= \frac{-6 \pm \sqrt{36 - 20}}{2} = \frac{-6 \pm \sqrt{16}}{2}$

$\frac{-6 \pm 4}{2} = \frac{-6+4}{2}$ or $\frac{-6-4}{2}$

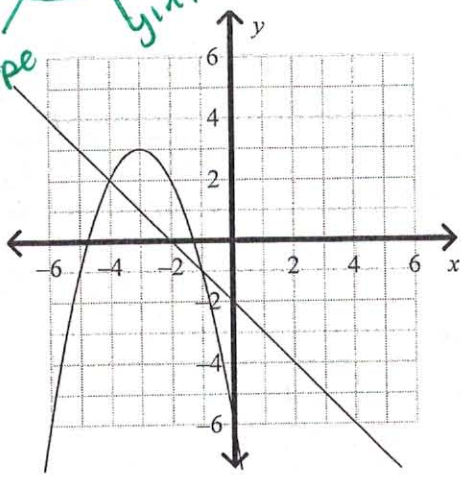
$\frac{-2}{2} \quad \frac{-10}{2}$

$-1 \quad -5$

Use graphing to find the solutions to the system of equations.

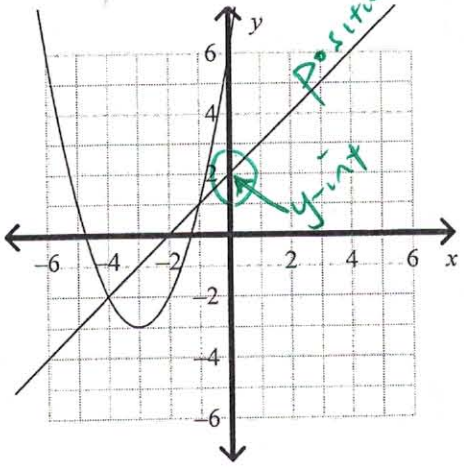
B 14. $\begin{cases} y = x^2 + 6x + 6 \\ y = x + 2 \end{cases}$

a.



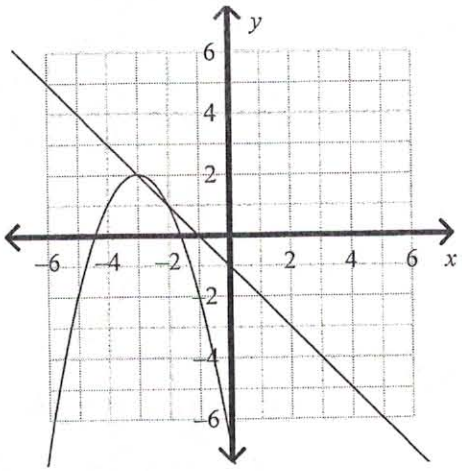
(–4, 2)
(–1, –1)

b.



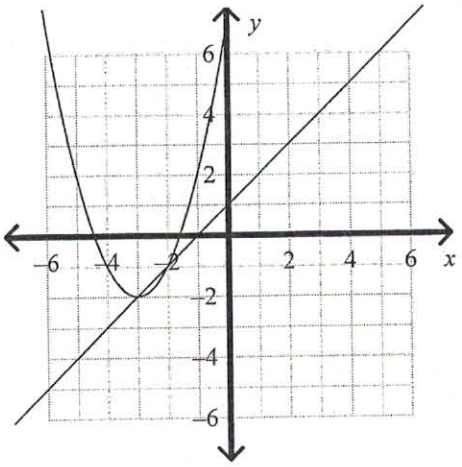
(–4, –2)
(–1, 1)

c.



(–3, 2)
(–2, 1)

d.



(–3, –2)
(–2, –1)

Short Answer

Solve the equation using the Zero-Product Property.

15. $(3x - 9)(9x + 4) = 0$

$3x - 9 = 0$ | $9x + 4 = 0$
$3x = 9$ | $9x = -4$
$x = 3$ | $x = -\frac{4}{9}$

What are the solutions of the equation?

16. $x^2 - 3x = 4$ $x^2-3x-4=0$ $(x-4)(x+1)=0$ $x-4=0$ $x=4$ | $x+1=0$ $x=-1$

17. Solve $x^2 + 3x - 4 = 0$ for x.
$(x+4)(x-1)=0$ $x=-4, 1$

Simplify the radical expression.

18. $\sqrt{80a^4b^4}$ $80 = 2\cdot2\cdot2\cdot2\cdot5$ $2\cdot2a^2b^2\sqrt{5} \rightarrow 4a^2b^2\sqrt{5}$

19. $\sqrt{98}$ $98 = 2\cdot49$ $7\sqrt{2}$

20. $\sqrt{500}$ $500 = 5\cdot100$ $10\sqrt{5}$

What value completes the square for the expression?

21. $x^2 + 6x$ $\left(\frac{b}{2}\right)^2 \rightarrow 9$

Find the vertex of each parabola by completing the square.

22. $x^2 - 6x + 8 = y$ $x^2-6x+9+8-9=y$ $\left(\frac{-6}{2}\right)^2$ $(x-3)^2-1=y$ V: $(3,-1)$

Solve the equation using square roots.

23. $x^2 - 81 = 0$ $+81\ +81$ $x^2=81$ $\sqrt{x^2}=\pm\sqrt{81}$ $x=\pm9$

Solve the equation by completing the square. Round to the nearest hundredth if necessary.

24. $x^2 - 4x = 10$ $x^2-4x+4=10+4$ $\left(\frac{-4}{2}\right)^2$ $(x-2)^2=14$ $\sqrt{(x-2)^2}=\pm\sqrt{14}$ $x-2=\pm\sqrt{14}$ $x=2\pm\sqrt{14}$

Use the Quadratic Formula to solve the equation.

25. $-x^2 + 6x + 7 = 0$ $x=\frac{-(6)\pm\sqrt{(6)^2-4(-1)(7)}}{2(-1)}=\frac{-6\pm\sqrt{36+28}}{-2}=\frac{-6\pm\sqrt{64}}{-2}=\frac{-6\pm8}{-2}$ $\frac{-6+8}{2}$ or $\frac{-6-8}{2} \rightarrow \frac{2}{2}$ or $\frac{-14}{2}$ 1 or -7

What is the solution of the linear-quadratic system of equations?

26. $\begin{cases} y = x^2 + 2x - 4 \\ y = x + 2 \end{cases}$

$0 = x^2+2x-4-(x+2)$
$= x^2+2x-4-x-2$
$0 = x^2+x-6$
$0 = (x+3)(x-2)$
$x+3=0$ $x=-3$ | $x-2=0$ $x=2$